

# Service Manual

Super Slim-Line Cassette Recorder for  
Personal Computer Data Storage

Portable Cassette  
**RQ-8200**  
(Black)

This is the Service Manual for the following areas.

- ..... For all European areas except United Kingdom.
- ▣ ..... For United Kingdom.



## RQ-2720 MECHANISM SERIES

### Specifications

Power requirement:	Battery: 6V (four R6 dry batteries)
	□ ... AC; with optional AC adaptor RD-9477
	▣ ... AC; with optional AC adaptor RP-67
Motor:	Electrical governor motor
Power output:	600mW ... Max.
Frequency range:	100 — 8,000 Hz
Tape speed:	4.8 cm/s
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Track system:	2-track monaural recording and playback
Jacks:	Mic; sensitivity 0.25 mV/applicable microphone impedance 200Ω — 600Ω
	Remote; for start and stop at hand
	Ext. SP; 8Ω
	DC in; 6V
Speaker:	6.5 cm
Dimensions:	119.0mm(W) × 29.9mm(H) × 198.5mm(D)
Weight:	535 g, without batteries

Specifications are subject to change without notice.

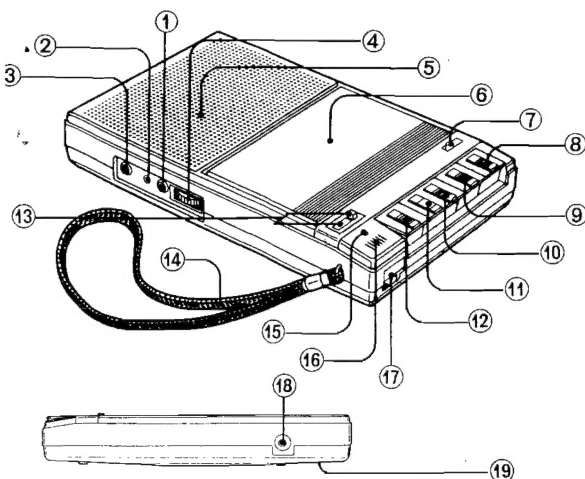
# Panasonic

**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan

# CONTENTS

ITEM	PAGE	ITEM	PAGE
LOCATION OF CONTROLS AND COMPONENTS .....	2	SCHEMATIC DIAGRAM .....	5
OPERATING INSTRUCTIONS .....	2	CIRCUIT BOARD AND	
DISASSEMBLY INSTRUCTIONS .....	3	WIRING CONNECTION DIAGRAM .....	7
MEASUREMENT AND ADJUSTMENT METHODS .....	4	MECHANICAL PARTS LOCATION .....	8
ELECTRICAL PARTS LOCATION .....	5	CABINET PARTS LOCATION .....	10

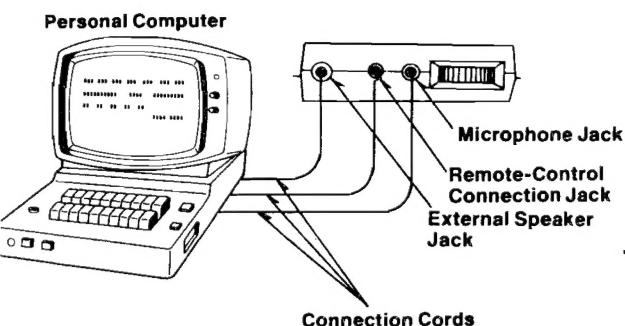
## LOCATION OF CONTROLS AND COMPONENTS



- |  |  |
|--|--|
| ① Microphone Jack (MIC)                      | ⑪ Record Button<br>[RECORD (○)]                            |
| ② Remote-Control Connection<br>Jack (REMOTE) | ⑫ Stop/Eject Button<br>[STOP/EJECT (■/▲)]                  |
| ③ External Speaker Jack<br>[EXT. SP (8Ω)]    | ⑬ Tape Counter and Reset<br>Button                         |
| ④ Volume Control<br>[MIN-VOLUME-MAX.]        | ⑭ Hand Strap   |
| ⑤ Built-in Speaker                           | ⑮ Recording Indicator/<br>Battery-check Lamp<br>(REC/BATT) |
| ⑥ Cassette Compartment<br>Cover              | ⑯ Built-in Microphone (MIC)                                |
| ⑦ Monitor Switch [MONITOR<br>(OFF●ON)]       | ⑰ Pause Control<br>[   PAUSE (LOCK●OFF)]                   |
| ⑧ Fast Forward/Cue Button<br>[FF/CUE (▶▶)]   | ⑱ Car Adaptor Connection<br>Jack (DC IN 6 V) (⊖→⊕)         |
| ⑨ Rewind/Review Button<br>[REW/REVIEW (◀◀)]  | ⑲ Battery Compartment<br>[ (↓) BATT OPEN ]                 |
| ⑩ Play Button [PLAY (▶)]                     |  |

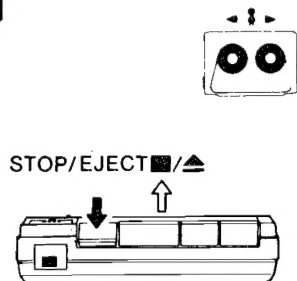
## OPERATING INSTRUCTIONS

### ■ Connection with Personal Computer

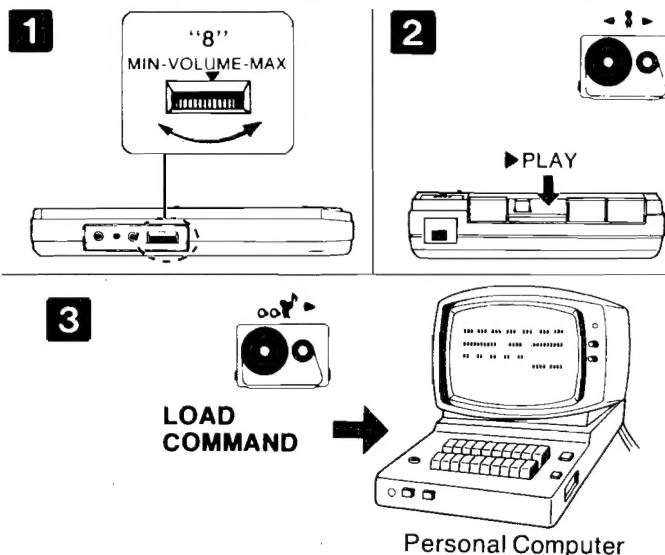


- For details, refer to the operating instructions of the personal computer.
- When the monitor switch is set to "on", the signals of the personal computer can be monitored at a low volume from the built-in speaker during recording and playback.

4



### PLAYING BACK (LOADING) PROGRAMS

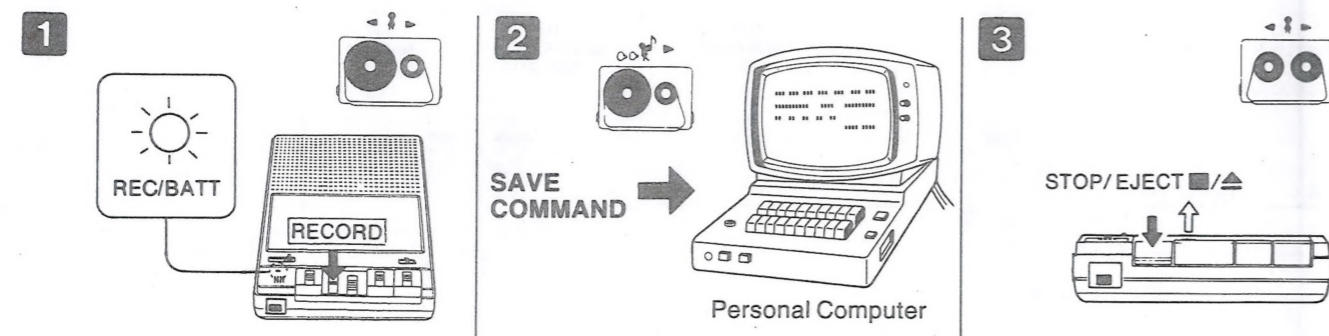


- Do not vary the volume while the tape is traveling since this may result in an error.

#### Notes:

- If the personal computer does not have a remote control function, push in the playback button and then set the pause switch to "on" immediately.
- The pause control is released when the personal computer is set to the load command, the tape is allowed to run and the program/data are read into the personal computer's memory.

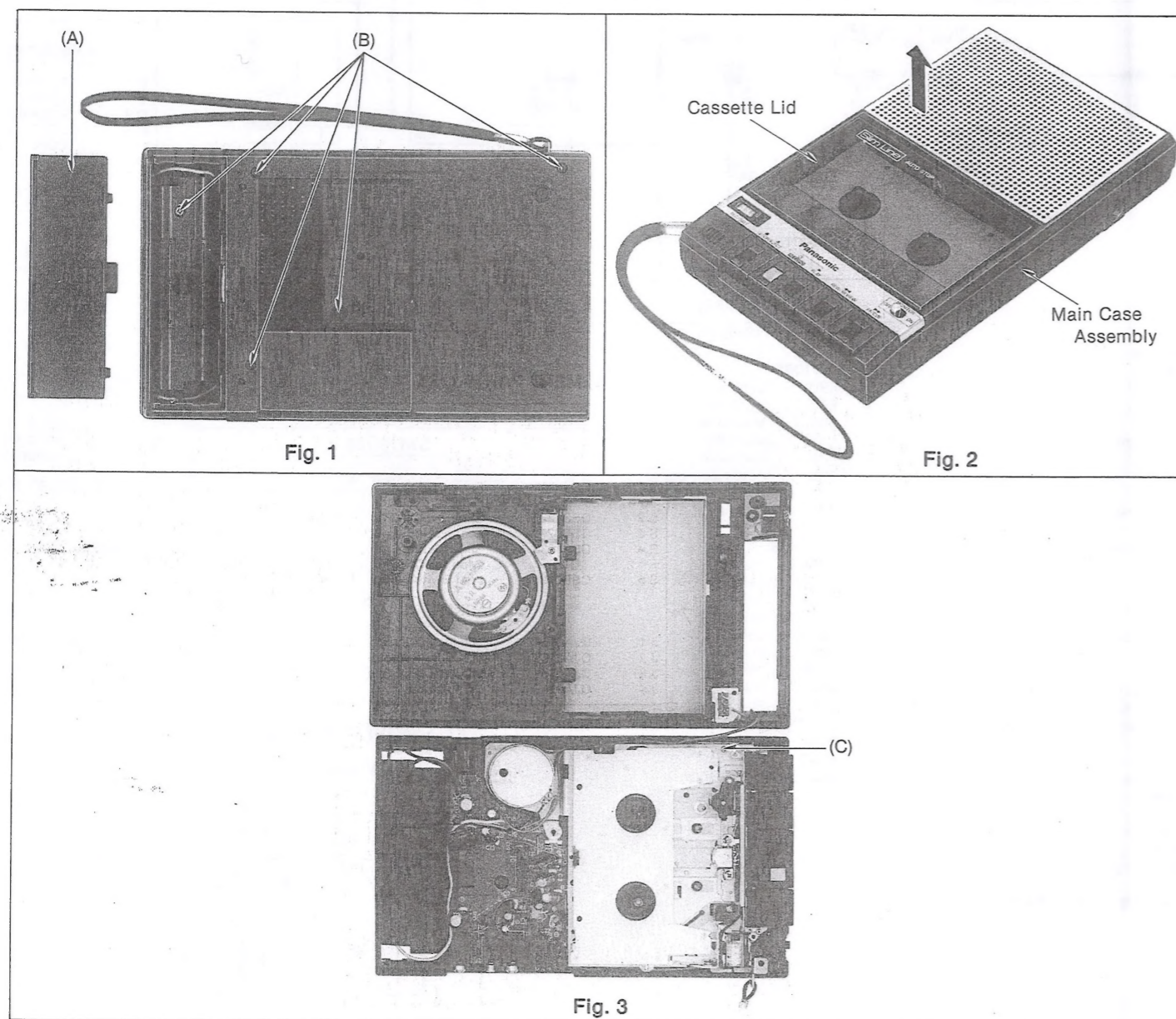
RECORDING (SAVING) PROGRAMS



Notes:

- If the personal computer does not have a remote control function, push in the record button and then immediately set the pause switch to "on".
- The pause control is released when the personal computer is set to the save command, the tape is allowed to run and the program/data of the personal computer are recorded onto the tape.

DISASSEMBLY INSTRUCTIONS



Procedure	To remove —	Remove —	Shown in fig. —
1	Main case assembly	• Battery cover ..... (A) • 5 screws ..... (B) Open the cassette lid and then remove the main case assembly in the direction of the arrow (shown in fig. 2).	1 1
2	Circuit board and mechanism unit	• 1 screw ..... (C)	3

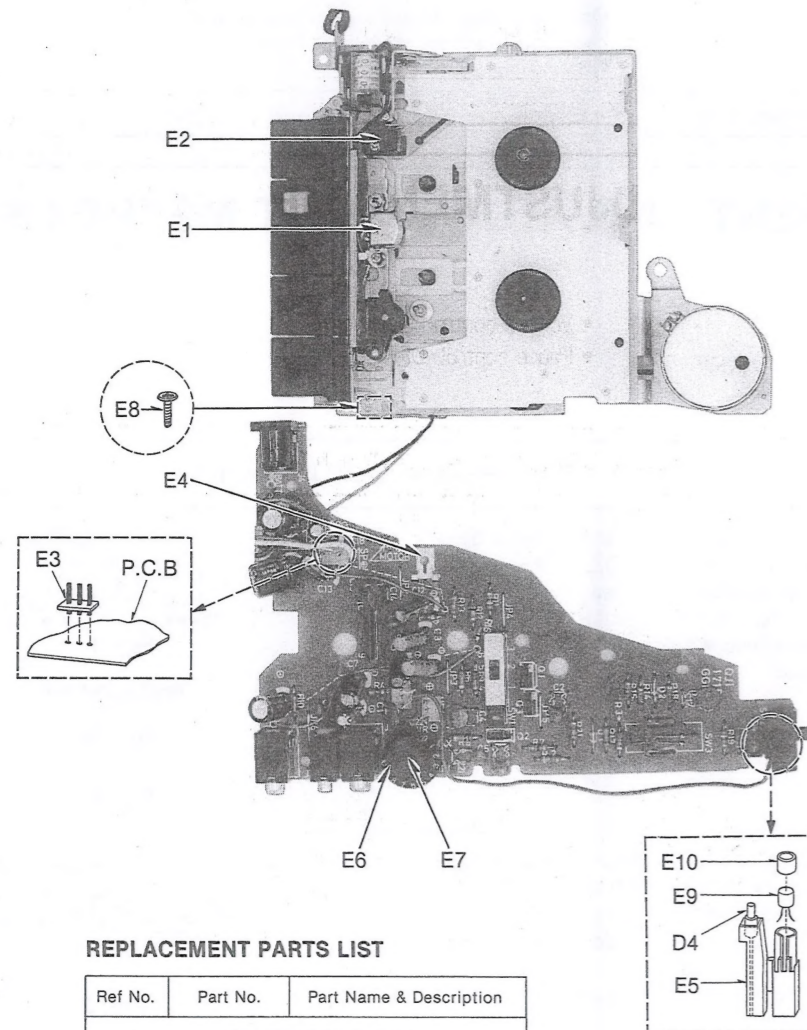
MEASUREMENT AND ADJUSTMENT METHODS

NOTES:

- Make sure head is clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature: 20±5°C (68±9°F)
- Volume control: Maximum
- Pause control: OFF

ITEM	MEASUREMENT & ADJUSTMENT
<b>Head azimuth adjustment</b> Condition: * Playback mode Equipment: * VTVM * Oscilloscope * Test tape (azimuth) ... QZZCFM * Resistor (8Ω)	<p>1. Test equipment connection is shown in fig. 1.</p> <p>2. Playback azimuth tape (QZZCFM 8kHz).</p> <p>3. Adjust record/playback head angle adjustment screw (A) in fig. 2 so that output level becomes maximum.</p> <p>4. After adjustment lock head adjustment screw with lacquer.</p> <p>Fig. 1</p> <p>Record/playback head EXT speaker 8Ω VTVM Oscilloscope</p> <p>Playback mode</p> <p>Record/playback head (A)</p> <p>Fig. 2</p>
<b>Tape speed accuracy adjustment</b> Condition: * Playback mode Equipment: * Digital electronic counter or frequency counter * Test tape ... QZZCWAT * Resistor (8Ω)	<p>1. Test equipment connection is shown in fig. 3.</p> <p>2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter.</p> <p>3. Take measurement at middle section of tape.</p> <p>4. Measure this frequency.</p> <p>5. On the basis of 3,000Hz, determine value by following formula:</p> $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%) \quad \text{where, } f = \text{measured value}$ <p>Standard value: ±3%</p> <p>Adjustment method</p> <p>1. Playback the test tape (middle).</p> <p>2. Adjust tape speed adjustment VR so that frequency becomes 3,000Hz.</p> <p>Fig. 3</p> <p>Record/playback head EXT speaker 8Ω Digital electronic counter</p> <p>Playback mode</p> <p>Motor</p> <p>Screwdriver</p> <p>8mm</p> <p>Tape speed adjustment VR</p> <p>Caution: Do not insert a screwdriver more than 8mm from surface A. If inserted further, rotor winding may be damaged.</p>

## ELECTRICAL PARTS LOCATION



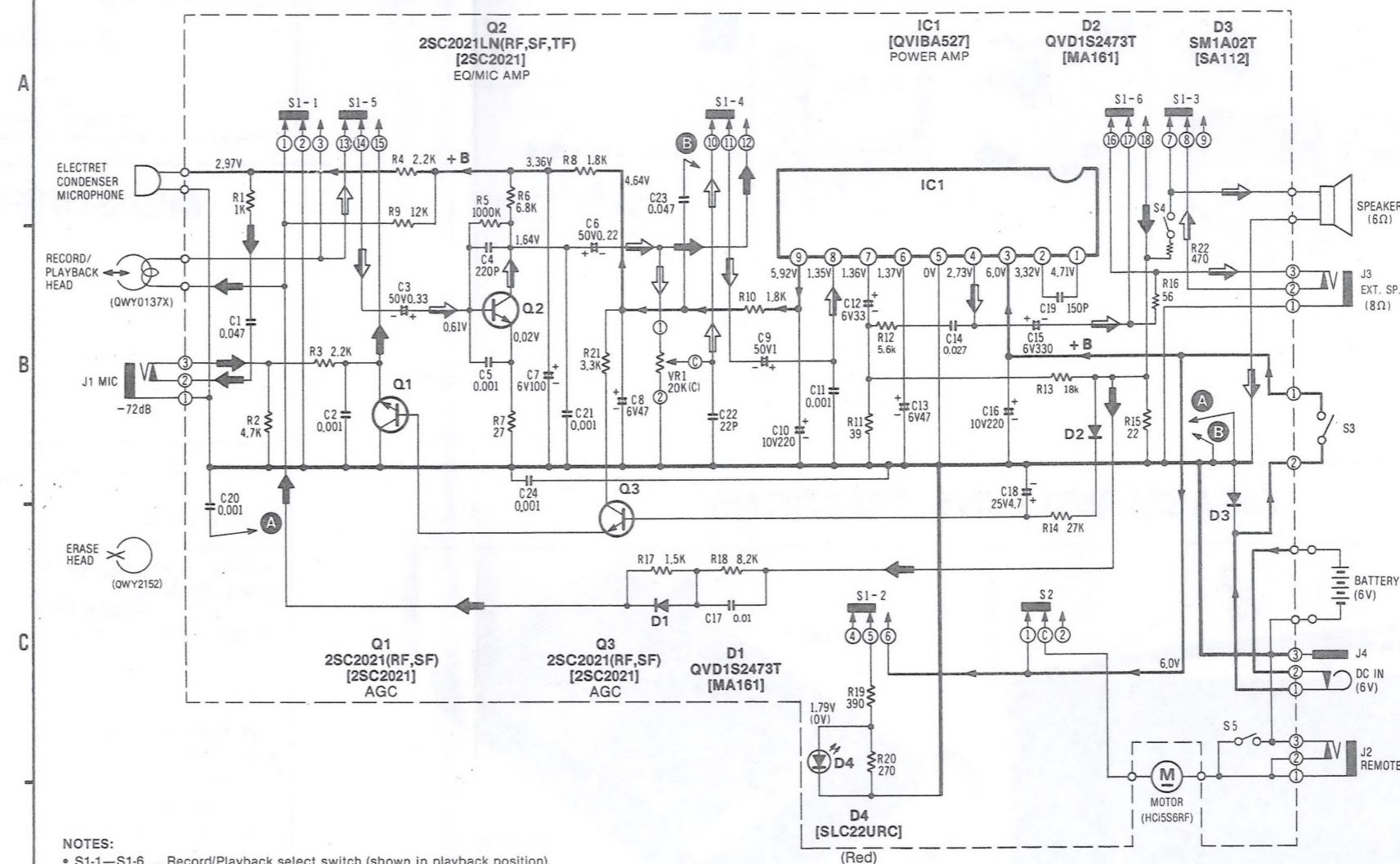
## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description
<b>ELECTRICAL PARTS</b>		
E 1	QWY0137X	Record/Playback Head
E 2	QWY2152	Erase Head
E 3	QJP1908JO	3Pin Post
E 4	QJC0043	Shield Plate
E 5	QKJ0478	LED Holder
E 6	QGT1602K	Volume Knob
E 7	XQN17B28FZ	Screw $\varnothing 1.7 \times 2.8$
E 8	XTN2 + 6B	Tapping Screw $\varnothing 2 \times 6$
E 9	WM063Y110	Condenser Microphone
E 10	QBG1695	Microphone Rubber

## SPECIFICATIONS \* Volume control ... MAX

Standard recording input level	MIC: around $-72\text{ dB}$
Overall frequency response	250Hz: $-1 \pm 5\text{ dB}$ 1kHz: $0\text{ dB}$ 6kHz: $-7 \pm 6\text{ dB}$
Playback output level * Use test tape ... QZZCFM (315 Hz, 0 dB)	More than 1.7 V

## SCHEMATIC DIAGRAM



## NOTES:

- S1-1—S1-6.....Record/Playback select switch (shown in playback position).
- S2.....Pause Lock/OFF switch (shown in OFF position).
- S3.....Power ON/OFF switch (shown in OFF position).
- S4.....Monitor switch (shown in OFF position).
- S5.....FF/REW Switch (shown in OFF position).
- VR1.....Volume control.
- Resistance are in ohms ( $\Omega$ ), 1/4 watt unless specified otherwise.  
K = 1000 $\Omega$ .
- Capacity are in microfarads ( $\mu\text{F}$ ) unless specified otherwise.  
P = Pico-farads.
- All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.
- However, the voltage in playback mode is indicated in ( ) when it differs from that in record mode.
- For measurement, use VTVM.
- ( $\Rightarrow$ ) this arrow indicates the flow of the playback signal.
- ( $\Rightarrow$ ) this arrow indicates the flow of the recording signal.
- ( $\Rightarrow$ ) this arrow indicates the flow of the playback and recording signal in combination.
- ( $\Rightarrow$ ) indicates B+ (bias).
- Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes. One type of number is used for supply parts number and production parts number when they are identical.  
e.g. Q1  
{2SC2021 (RF, SF)}.....Production parts number  
{2SC2021SF}.....Supply parts number  
D2  
{QVD1S2473T}.....Production parts number  
{(MA161)}.....Supply parts number
- The supply parts number is described alone in the replacement parts list.

• This schematic diagram may be modified at any time with the development of new technology.

## NOTES: RESISTORS

ERD.....Carbon  
ERG.....Metal-oxide  
ERS.....Metal-oxide  
ERO.....Metal-oxide  
ERX.....Metal-film  
ERQ.....Fuse type metallic  
ERC.....Solid  
ERF.....Cement

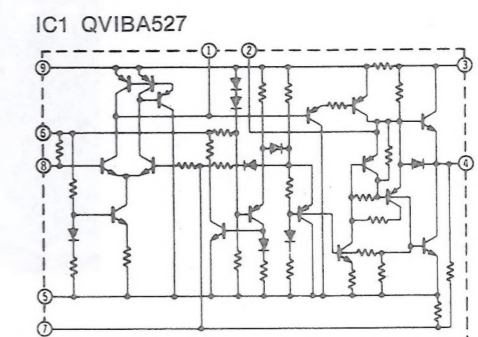
## CAPACITORS

ECBA.....Ceramic  
ECGD.....Ceramic  
ECKD.....Ceramic  
ECCD.....Ceramic  
ECFD.....Ceramic  
ECQM.....Polyester film  
ECQE.....Polyester film  
ECQF.....Polypropylene  
ECEQ.....Electrolytic  
ECEQN.....Non polar electrolytic  
ECQS.....Polystyrene  
ECSD.....Tantalum  
QCS.....Tantalum

## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description
<b>SWITCHES</b>		
S 1	QSS6220	Slide Switch (Record/Playback Selector)
S 2	QSS1227	Slide Switch (Pause ON/OFF)
S 3	QSB0272	Leaf Switch (Power ON/OFF)
S 4	QSS1230	Slide Switch (Monitor ON/OFF)
S 5	QSB0195	Leaf Switch (FF/REW ON/OFF)
<b>JACKS</b>		
J 1	QJA0154	M3 Jack (Microphone)
J 2	QJA0156	M2 Jack (Remote)
J 3	QJA0154	M3 Jack (Ext. Speaker)
J 4	QJA0149	DC IN Jack

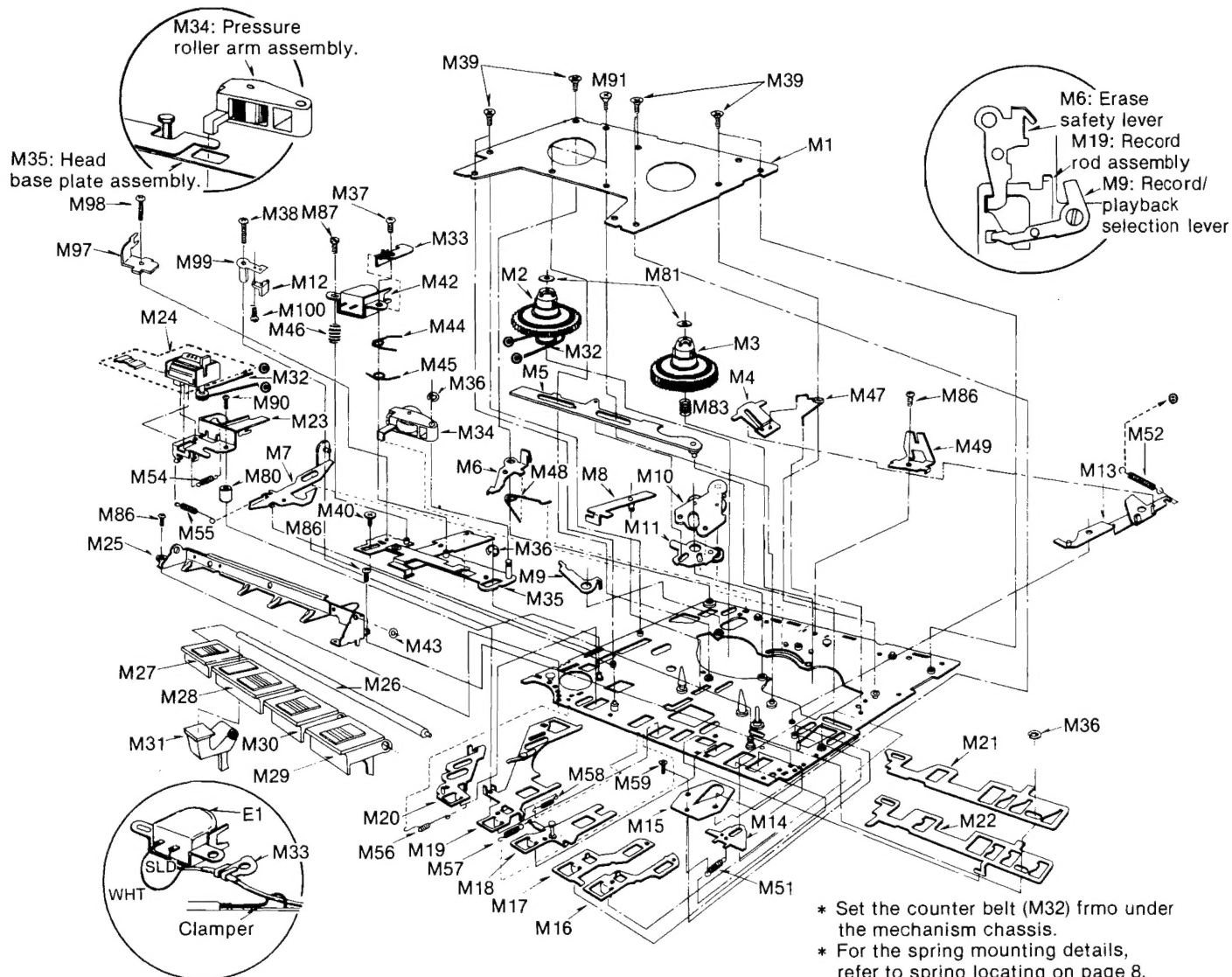
## EQUIVALENT CIRCUIT



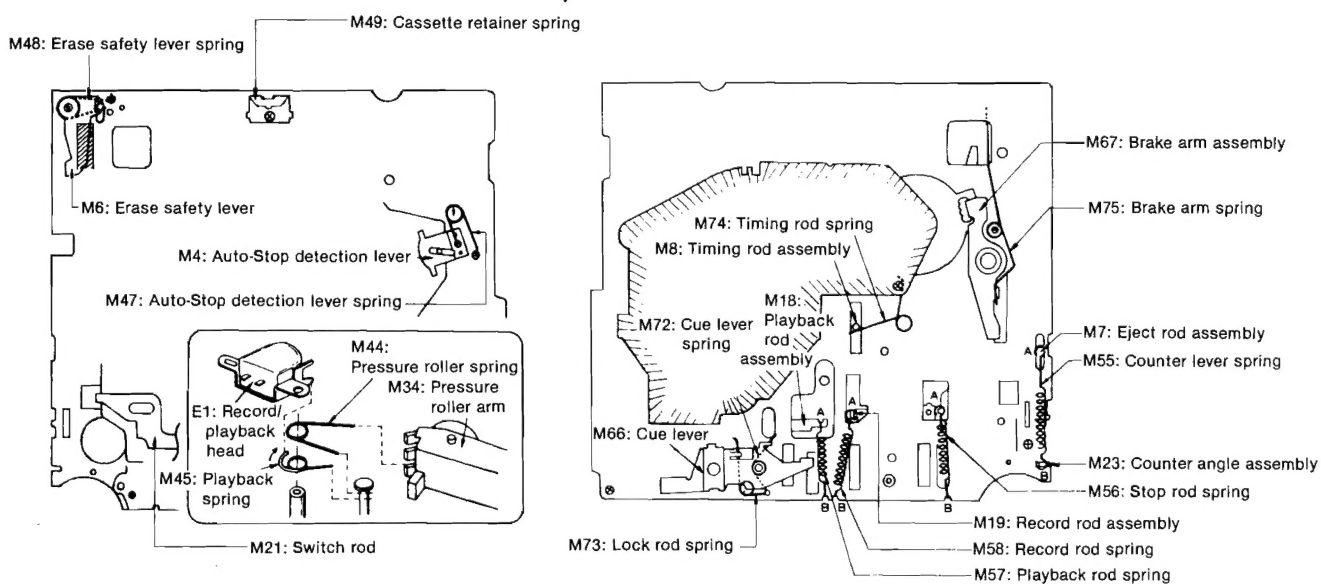
Ref No.	Part No.
<b>RESISTORS</b>	
R 1	ERD25FJ102
R 2	ERD25FJ472
R 3, 4	ERD25FJ222
R 5	ERD25TJ105
R 6	ERD25FJ682
R 7	ERD25FJ270
R 8	ERD25FJ182
R 9	ERD25TJ123
R 10	ERD25FJ182
R 11	ERD25FJ390
R 12	ERD25FJ562
R 13	ERD25TJ183
R 14	ERD25TJ273
R 15	ERD25FJ220
R 16	ERD10TJ560
R 17	ERD25FJ152
R 18	ERD25FJ822
R 19	ERD25FJ391
R 20	ERD25FJ271
R 21	ERD25FJ332
R 22	ERD25FJ471
<b>VARIABLE RESISTOR</b>	
VR 1	EVLEAAT12C24
<b>CAPACITORS</b>	
C 1	ECFDD473KVY
C 2	ECFDD102KVY
C 3	ECEA50ZR33
C 4	ECCD1H221K
C 5	ECFDD102KVY
C 6	ECEA50ZR22
C 7	ECEA1AS101
C 8	ECEA1AS470
C 9	ECEA50Z1
C 10	ECEA1AS221
C 11	ECFDD102KVY
C 12	ECEA1CS330
C 13	ECEA1AS470
C 14	ECFDD273KVY
C 15	ECEA1AS331
C 16	ECEA1AS221
C 17	ECFDD103KVY
C 18	ECEA25Z4R7
C 19	ECCD1H151K
C 20, 21	ECFDD102KVY
C 22	ECCD1H220KC
C 23	ECFDD473KVY
C 24	ECFDD102KVY
<b>TRANSISTORS</b>	
Q 1, 2, 3	2SC2021
<b>DIODES &amp; RECTIFIERS</b>	
D 1, 2	MA161
D 3	SM112
D 4	SLC22URC
<b>INTEGRATED CIRCUIT</b>	
IC 1	QVIB527

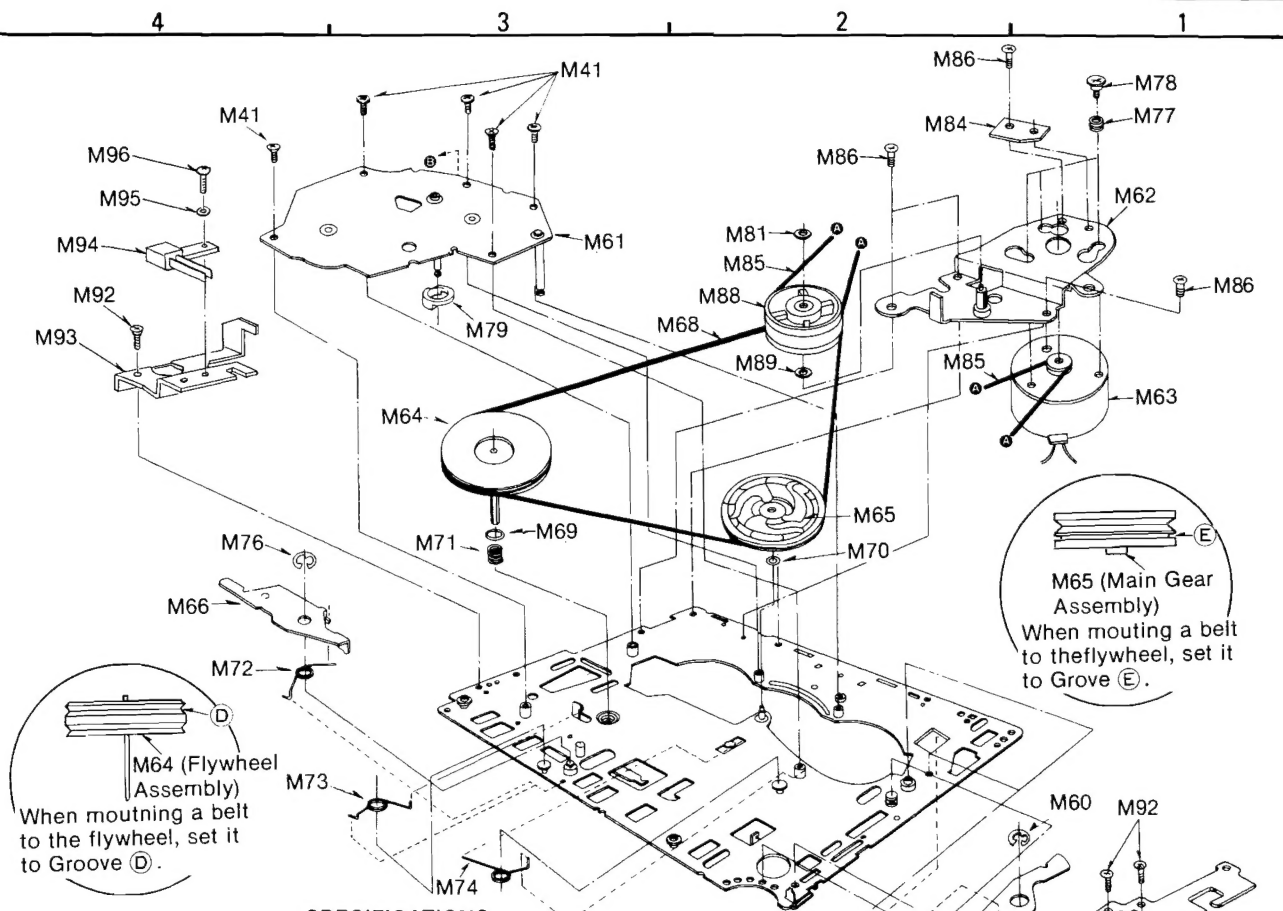
- 7 -

# MECHANICAL PARTS LOCATION



## SPRING LOCATION





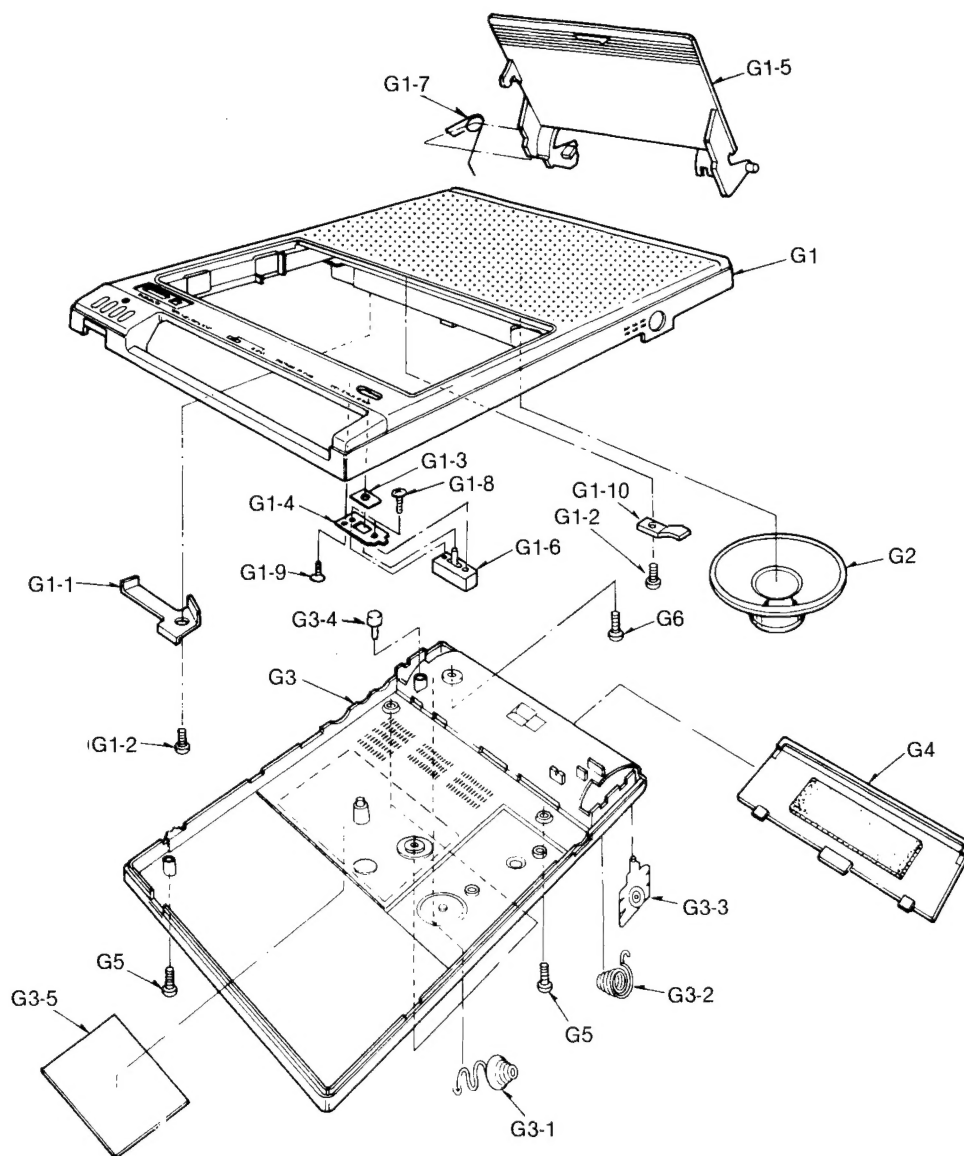
## SPECIFICATIONS

Pressure of pressure roller	250 ± 30 g
Takeup tension * Use cassette torque meter ... QZZSRKCT	35 $\pm$ 10 - 7 g-cm
Wow and flutter (JIS) * Use test tape ... QZZCWAT	Less than 0.5% (RMS)

## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
<b>MECHANICAL PARTS</b>			M 32	QDB0256	Counter Belt	M 67	QXL1307	Brake Arm Assembly
M 1	QMK1795	Chassis Cover	M 33	QTD1274	Head Lead Clamper	M 68	QDB0279	Flywheel Belt
M 2	QDG1238	Supply Reel Table	M 34	QXL1282	Pressure Roller Arm Assembly	M 69	QBW2059	Washer
M 3	QXD0128	Takeup Reel Table	M 35	QXK2158	Head Base Plate Assembly	M 70	QBW2010	Washer
M 4	QML3451	Auto-Stop Detection Lever	M 36	XUC2FT	Stop Ring 2φ	M 71	QBC1403	Flywheel Spring
M 5	QXR0471	Control Rod Assembly	M 37	XSN2 + 4	Screw ⌀2 × 4	M 72	QBN1697	Cue Lever Spring
M 6	QML3447	Erase Safety Lever	M 38	XSN2 + 12	Screw ⌀2 × 12			
M 7	QXR0495	Eject Rod Assembly	M 39	XTSQ16A4JFC	Screw ⌀1.6 × 4	M 73	QBN1649	Lock Rod Spring
M 8	QXR0472	Timing Rod Assembly	M 40	QH1293	Step Screw	M 74	QBN1654	Timing Rod Spring
M 9	QML3792	Record/Playback Selection Lever	M 41	XTNQ16C4JFY	Screw ⌀1.6 × 4	M 75	QBN1695	Brake Arm Spring
M 10	QXL1278	Fast Wind Gear Assembly	M 42	refer to E1	Record/Playback Head	M 76	XUC2FT	Stop Ring 2φ
M 11	QXL1279	Takeup Gear Lever Assembly	M 43	QBW2008	Washer	M 77	QBG1676	Motor Rubber
M 12	refer to E2	Erase Head	M 44	QBN1650	Pressure Roller Spring	M 78	QH1302	Step Screw
M 13	QXL1412	Lock Release Lever Assembly	M 45	QBN1651	Playback Spring	M 79	QMD0021	Auto-Stop Cam
M 14	QML3442	Fast Wind Control Rod	M 46	QBC1339	Head Spring	M 80	QMC0095	Rod Collar
M 15	QMF2078	Control Lever Pressure Plate	M 47	QBN1829	Auto-Stop Detection Lever Spring	M 81	QBW2030	Washer
M 16	QMR1742	Fast Forward Rod	M 48	QBN1647	Erase Safety Lever Spring	M 82	QYH0103K	Hand Strap Assembly
M 17	QMR1741	Rewind Rod	M 49	QBP1843	Cassette Retainer Spring	M 83	QBC1402	Back Tension Spring
M 18	QXR0473	Playback Rod Assembly	M 51	QBT1864	Fast Wind Control Lever	M 84	QMF2112	Stopper
M 19	QXR0494	Record Rod Assembly				M 85	QDB0280	Motor Belt
M 20	QXR0476	Stop Rod Assembly	M 52	QBT1874	Lock Release Lever Spring	M 86	XTNQ16C3F	Screw ⌀1.6 × 3
M 21	QMR1744	Switch Rod	M 54	QBT1875	Eject Lever Spring	M 87	XSBQ2D45	Head Adjustment Screw
M 22	QMR1743	Lock Rod	M 55	QBT1863	Counter Lever Spring	M 88	QXP0630	Pulley Assembly
M 23	QXA0776	Counter Angle Assembly	M 56	QBT1862	Stop Rod Spring	M 89	QBW2012	Washer
M 24	QDC0146	Tape Counter	M 57	QBT1860	Playback Rod Spring	M 90	XQN16 + C4FY	Screw ⌀1.6 × 4
M 25	QXA0777	Button Angle Assembly	M 58	QBT1861	Record Rod Spring	M 91	XQS16 + A22FC	Screw ⌀1.6 × 2.2
M 26	QMN2412	Button Shaft	M 59	XTNQ16A3JFC	Screw ⌀1.6 × 3	M 92	XTNQ16 + 3F	Screw ⌀1.6 × 3
M 27	QGO1844K	Push Button (Stop/Eject)	M 60	XUB3FT	Stop Ring 3φ	M 93	QMA4455	Switch Angle
M 28	QGO1845K	Push Button (Playback)	M 61	QXK2387	Lower Base Plate Assembly	M 94	refer to S5	Leaf Switch (FF/REW Switch)
M 29	QGO1847K	Push Button (Fast Forward/Cue)	M 62	QXA1157	Motor Holding Plate Assembly	M 95	XWC2B	Washer
M 30	QGO1846K	Push Button (Rewind/Review)	M 63	HCI5S6RF	DC Motor	M 96	XSN2 + 4	Screw ⌀2 × 4
M 31	QGO1848	Push Button (Record)	M 64	QXF0169	Flywheel Assembly	M 97	QMG0071	Tape Guide
			M 65	QXG1058	Main Gear Assembly	M 98	XQN16A + 16FC	Screw ⌀1.6 × 1.6
			M 66	QML3449	Cue Lever	M 99	QXA1291	Head Plate Assembly
						M 100	XSS2 + 15	Screw ⌀2 × 1.5

# CABINET PARTS LOCATION



## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
<b>CABINET PARTS</b>			G 3-3	QJB0144	Battery Terminal (+)
G 1	QYM0861	Main Case Assembly	G 3-4	QBG1553	Rubber Cushion
G 1-1	QBP1929	Cassette Lid Spring	G 3-5	QGS3045	Main Name Plate
G 1-2	XTN2 + 6B	Tapping Screw $\varnothing 2 \times 6$	G 4	QYF0437	Battery Cover Assembly
G 1-3	QQC1900	Shelter (for G1-6)	G 5	XTN26 + 23JFZ	Screw $\varnothing 2.6 \times 2.3$
G 1-4	QMF2257	Switch (S4) Angle	G 6	XTN26 + 8B	Tapping Screw $\varnothing 2.6 \times 8$
G 1-5	QKF2095	Cassette Lid	<b>ACCESSORY</b>		
G 1-6	refer to S4	Monitor Switch	A 1	QQT3372	Instruction Book
G 1-7	QBN1875	Eject Spring	<b>PACKINGS</b>		
G 1-8	XQS14 + C18	Screw $\varnothing 1.4 \times 1.8$	P 1	QPN4371	Inside Carton
G 1-9	XQN16 + C35	Screw $\varnothing 1.6 \times 3.5$	P 2	XZB16X25A02	Poly Bag (for UNIT)
G 1-10	QMA3903	Speaker Holding Metal	P 3	QPS0445	Pad
G 2	EAS65P31S	Speaker	P 4	QPA0657	Cushion
G 3	QYM0862	Bottom Case Assembly			
G 3-1	QBN8024	Battery Terminal-A (-)			
G 3-2	QBN8023	Battery Terminal-B (-)			